

Behavioral Insights from a Real-time Pricing Program

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Program Overview

- Residential Real-time Pricing (RRTP) program, 2007-present
- Illinois State Law (Public Act 94-0977)
- Optional & available to all ComEd residential customers
- \$2.25 monthly participation fee (discontinued in June 2011)
- 11,000+ participants by the end of 2010

Program Overview

- High Price Alerts
 - Day Ahead (14¢ thresholds)
 - Day-of (10¢ & 14¢ thresholds)
 - 14¢ is default
- Load Guard Load Automated Price Response Service
 - AC Cycling program
 - (10¢ & 14¢ thresholds)

Conservation Effects

Season	Overall Percentage Impact	Average daily kWh Impact	Average Seasonal Impact (kWh)
Summer	-5.0%	-1.86	-171
Spring	-2.4%	-0.58	-54
Autumn	-4.8%	-1.28	-117
Winter	-3.2%	-1.04	-94
Annual Impact:	-4.0%	Average Annual Savings (kWh):	-435

- There is no discernable impact on conservation as a result of the interaction between participation in RRTP and participation in the ComEd energy efficiency programs.
- There is no discernable impact on conservation as a result of the interaction between participation in RRTP and participation in the Load Guard program.

Hourly Impacts: Load Shapes

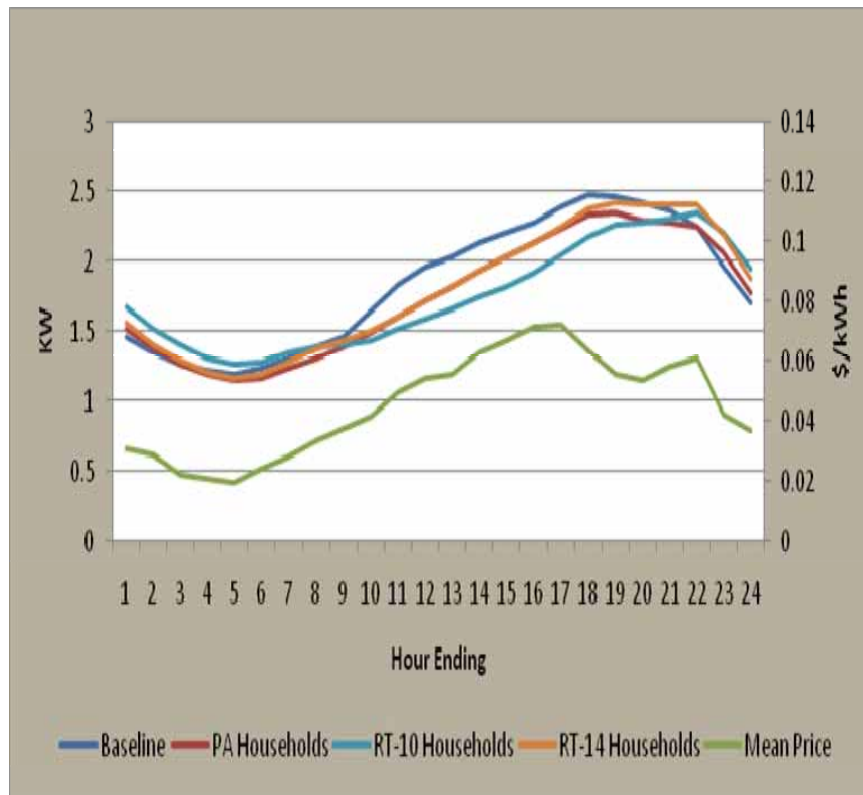
Impacts of high price alerts vary by the type of alert and type of household:

- **Baseline:** Average consumption by control households not in the RRTP program.
- **Hour Types:**
 - RT-10 Alert: Real-time alert that the price for the hour has exceeded 10 cents;
 - RT-14 Alert: Real-time alert that the price for the hour has exceeded 14 cents;
 - Non-event: No alert in effect.
- **Household Types:**
 - RT14 Households: Households that receive real-time price alerts via email or text message when the price hits 14 cents; the default real-time alert category.
 - RT10 Households: Households that receive real-time price alerts when the price hits 10 cents; opt-in.
 - PA Households: “Passive Alert” households –those that do not receive email or text message when there is a real time alert.

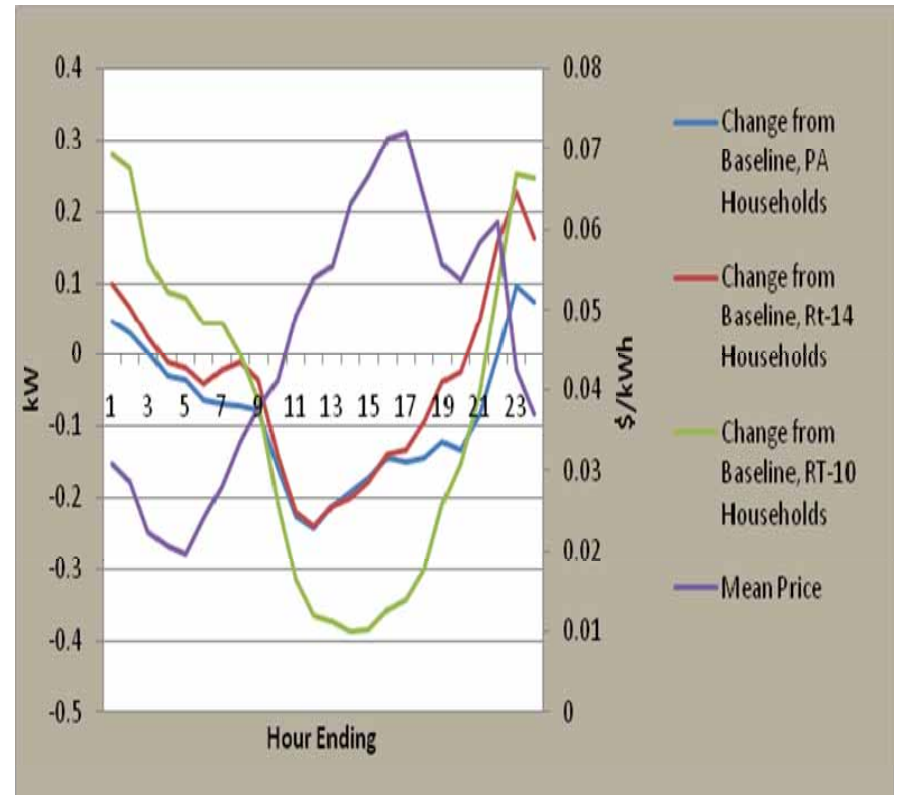
Hourly Impacts: Load Shapes

There are program impacts even on non-event days.

Hourly Load Shapes
Summer 2010, Weekdays, Non-Events



Difference from baseline
Summer 2010, Weekdays, Non-Events

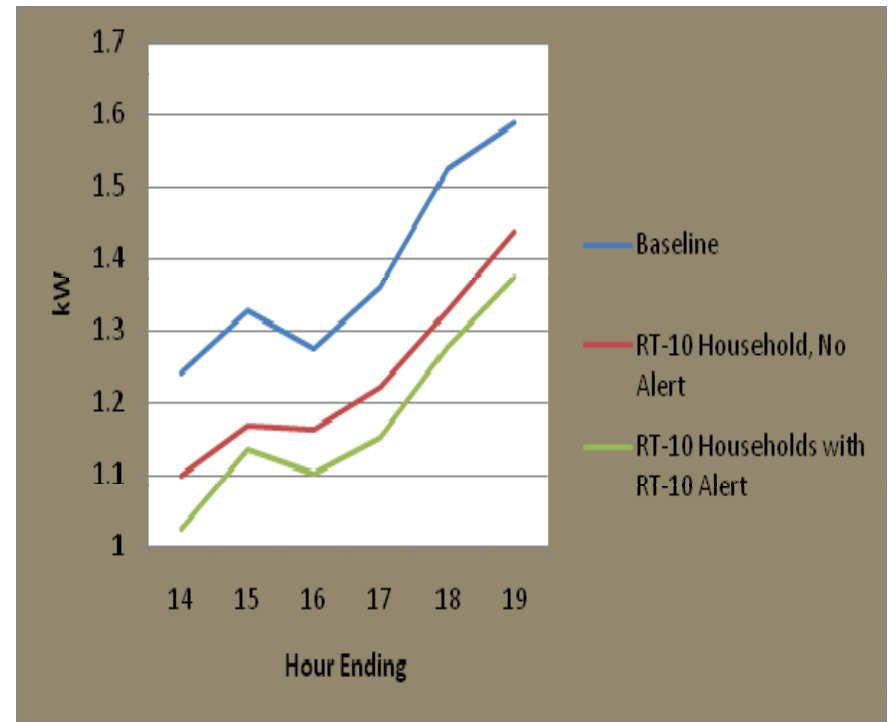
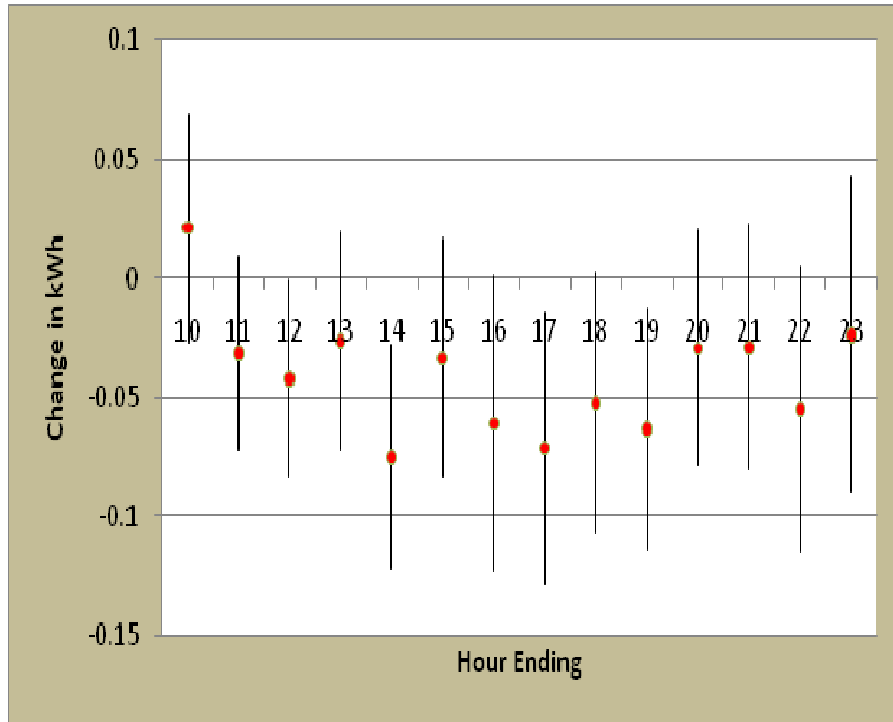


Hourly Impacts: Effects of Alerts

RT-10 Alerts as an Illustrative Example: Small Effect, Often not Statistically Significant

Estimated Direct Effect of RT-10 Alerts on Energy Consumption by RT-10 Households, with 95% Confidence Bounds, Summer Weekdays 2008

Effect of RT-10 Alert on Energy Consumption by RT10 Households, Summer Weekdays 2008, 2PM-7PM



Price Responsiveness

In general, RRTP households can be expected to respond to prices at three time scales:

- **In the long run:** households respond to the distribution of prices in their decisions concerning capital investments, such as energy efficient appliances. For instance, the opportunity to run appliances when prices are relatively low may reduce the incentive to buy an energy efficient appliance.
- **In the medium run:** households respond to differences in *average hourly price* with a broad shift in energy consumption behavior as compared to their behavior under the fixed-price regime, forming new habits and modes of operation, such as running dishwashers at night. Such broad shifts in behavior are consistent with the information provided to RRTP customers indicating that shifting energy consumption to overnight hours, when prices are low, reduces energy bills. **Estimated elasticities average -0.10.**
- **In the short run:** households respond to *deviations* from average hourly prices, e.g. on high price alert days. Real-time pricing programs that provide price information cheaply (e.g. via high price alerts) serve to reduce this cost. **Estimated elasticities for RT-10 households to RT-10 alerts: -0.15 to -0.31.**

Questions?

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